CKD

SM－10261－A

INSTRUCTION MANUAL

SUPER DRYER UNIT

SU3000, SU4000

- Please read this instruction manual carefully before using this product, particularly the section describing safety.
- Retain this instruction manual with the product for further consultation whenever necessary.

APR-06 5th edition
CKD Corporation

Table of Contents

1. PRODUCT

1-1. Specifications

Item \ Series			SU3000·4000
Application conditions	Fluid used		Compressed air
	Inlet air pressure	MPa	0.4～1.0
	Proof pressure	MPa	1.5
	Inlet air temperature	℃	5～50
	Ambient temperature	℃	5～50
Standard rating	Outlet atmospheric dew point	℃	-20, -40
	Outlet air flow		Refer to table below
	Inlet pressured dew point	℃	25
	Inlet air pressure	MPa	0.5, 0.7
	Inlet air temperature	℃	25
	Ambient temperature	℃	25
Filtration ratio		μm	5
Pressure setting range		MPa	0.05～0.85
Relief pressure		MPa	Setting pressure plus 0.05
Standard accessory			Pressure gauge, Pressure differential gauge, Bracket

Item / Model code	Outlet atmospheric dew point (℃)	Inlet air pressure (MPa)	Outlet air flow ℓ/min(ANR)	Necessary Inlet air flow ℓ/min(ANR)	Port size(Rc)	Weight(kg)
SU3015-A07	-20	0.7	100	125	3/8	3.3
SU3025-A07			240	300		4.4
SU3035-A07			390	490		4.8
SU3050-A07			610	760		7.7
SU3075-A07			960	1200		8.6
SU4100-A07			1260	1500	1/2	11.8
SU3015-B07	-40	0.7	25	35	3/8	3.3
SU3025-B07			65	90		3.7
SU3050-B07			170	230		5.3
SU4050-B07			300	410	1/2	9.0
SU4100-B07			650	890		11.8
SU3015-A05	-20	0.5	50	75	3/8	3.3
SU3025-A05			150	210		4.4
SU3035-A05			250	350		4.8
SU3050-A05			400	550		7.7
SU3075-A05			600	840		8.6
SU4100-A05			900	1140	1/2	11.8
SU3015-B05	-40	0.5	15	25	3/8	3.3
SU3025-B05			40	65		3.7
SU3050-B05			100	160		5.3
SU4050-B05			200	310		9.0
SU4100-B05			400	640	1/2	11.8

Components

Model code	Filter	Oil mist filter	Super Dryer	Regulator	Differential pressure gauge
SU3015-○○	F3000-10-F	M3000-10-F1	SU3015-○○	R3000-10	GA400-8-P02
SU3025-B○			SU3025-B○		
SU3025-A○	F4000-10-F	M4000-10-F1	SU3025-A○	R4000-10	
SU3035-A○			SU3035-A○		
SU3050-B○			SU3050-B○		
SU3050-A○		SM4000	SU3050-A○		
SU3075-A○			SU3075-A○		
SU4050-B○	F4000-15-F		SU4050-B○	R4000-15	
SU4100-○○			SU4100-○○		

1-2.Model selection

(1) Model selection method

The performance curve of dew point as mentioned above are shown the relationship between output air pressured dew point on condition that inlet air pressure is 0.7 MPa and its temperature is 25℃(saturated). Select the model on the right of the intersection of the required dew point and the required flow.

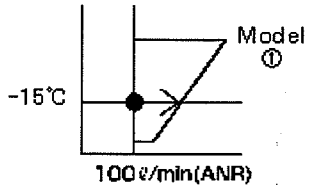
<Correction method of air flow>

It is necessary that output air flow shall be corrected by each correction curve, except for rated conditions.

(Rated output air flow) × (Correction factor) = (Output air flow)

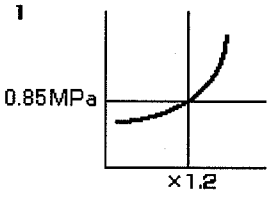
But, in the case of the air by which input air passed along the refrigerated drier, select inlet air temperature as 10 ℃ regardless of an actual temperature.

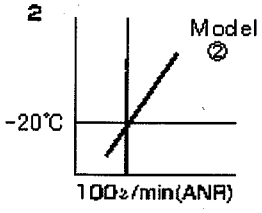
(例) Required dew point : 15℃
Required air flow : 100ℓ/min(ANR)
The model ① which is located on the right of the intersection shall be selected.



(例) Inlet air pressure : 0.85Mpa
Required dew point : 20℃
Required air flow : 120ℓ/min(ANR)

1. The correction factor 1.2 shall be read from outlet air flow correction curve against inlet air pressure.
2. The model ② shall be selected flow performance curve of dew point, since outlet air flow is 120ℓ/min ANR (=100ℓ/min ANR × 1.2)

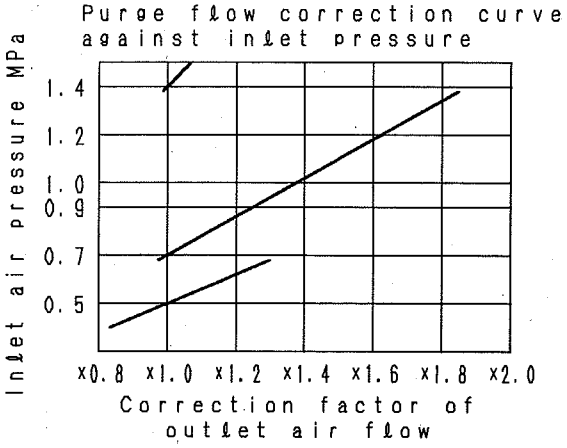




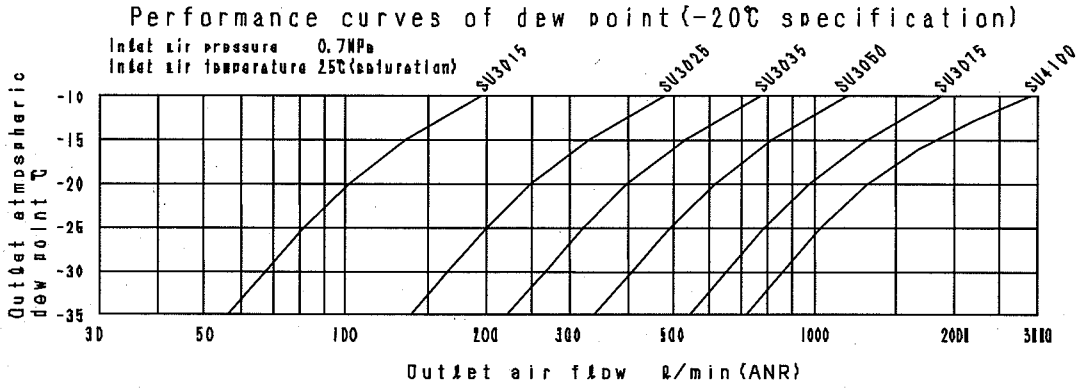
(2) Purge flow

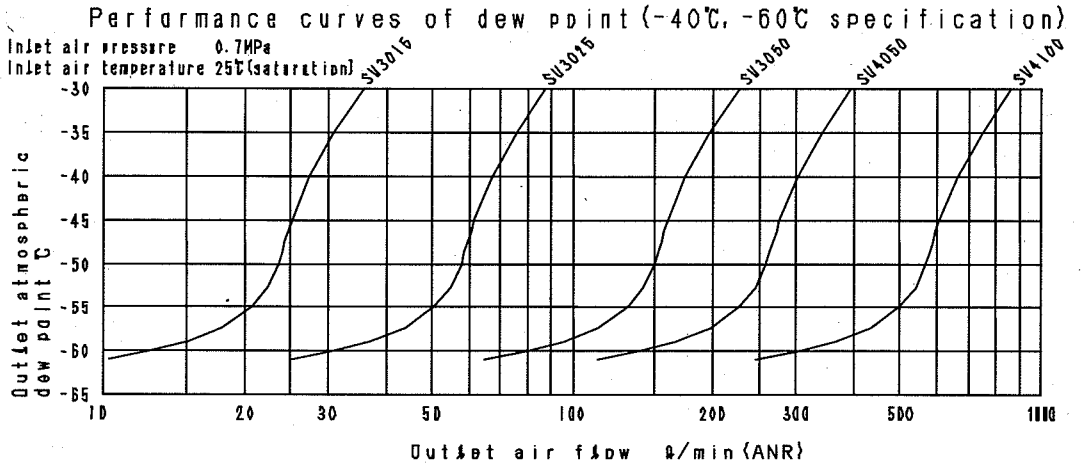
Purge flow is shown in each specification column. The flow which added purge flow to outlet side use air flow should be can be supplied from an inlet.

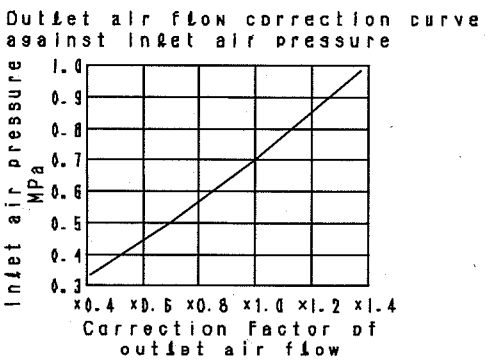
Purge flow in case inlet air pressure differs from rating turns into flow which applied the correction factor of the right to rated purge flux.

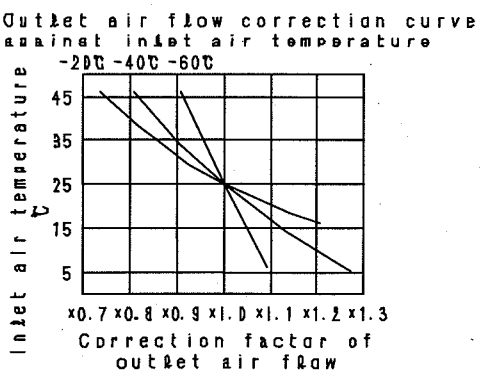


(3) Dew point performance



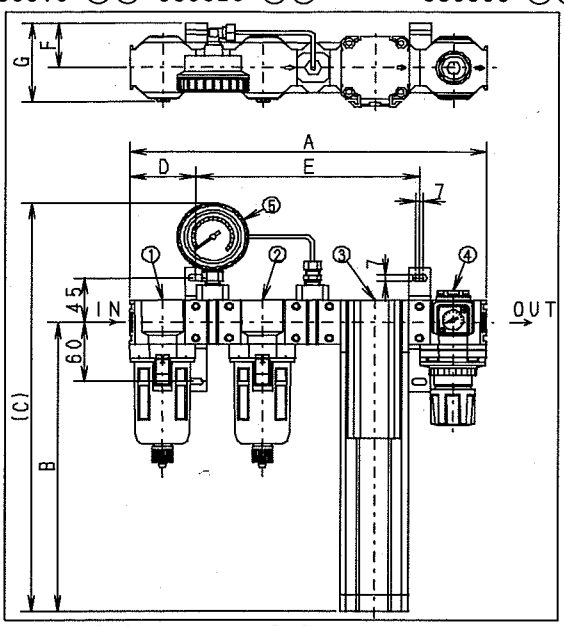




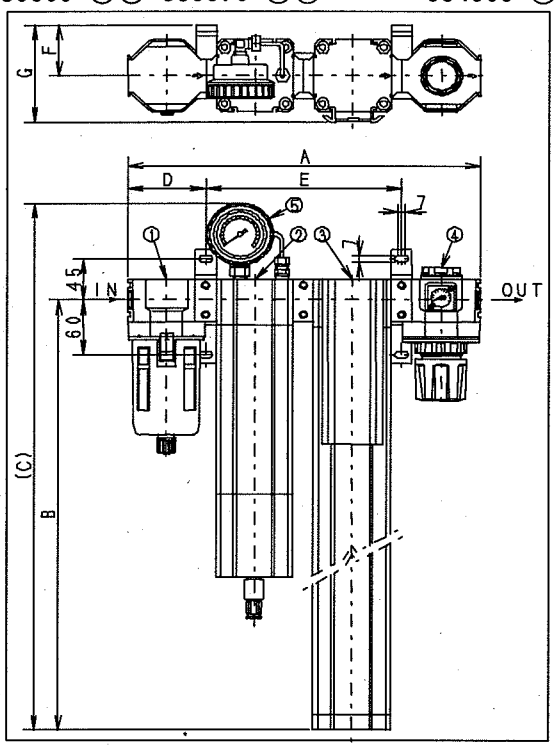


1-3. Outside drawing

● SU3015-○○ SU3025-○○ SU3035-○○ SU3050-B○



● SU3050-○○ SU3075-○○ SU4050-○○ SU4100-○○



Model code	A	B	C	D	E	F	G
SU3015-○○	337	193	313	63	211	45	85
SU3025-B○	337	293	413	63	211	45	85
SU3025-A○	388	293	413	80	228	55	97
SU3035-A○	388	393	513	80	228	55	97
SU3050-B○	388	543	663	80	228	55	97
SU3050-A○	345	543	649	80	185	55	97
SU3075-A○	345	793	899	80	185	55	97
SU4050-B○	360	543	649	80	200	55	106
SU4100-○○	360	1043	1149	80	200	55	106

No.	Model
1	Air filter
2	Oil mist filter
3	Super dryer
4	Regulator
5	Differential pressure gauge

2. CAUTION

1) Use within ambient temperature of 5～60℃.
2) Avoid use in the state where inlet air temperature becomes higher than ambient temperature. (An inside may be covered with waterdrop if the main part of a super dryer is cooled.)
3) Keep operating pressure below 1.5MPa.
4) Avoid installation close to welding or spray painting areas.
5) Avoid installation in direct sun light.
6) Air filter of 5 μ m filtration and oil mist filter to be installed at inlet of Super dryer when supplied air is lubricated and close to saturated.
7) Pressure reducing valve, such as regulator to be installed at outlet of Super dryer.
8) Super dryers reduce oxygen content. Do not use for breathing air.

2. CAUTION

2-1. Chemical Resistance of Plastic Bowls

Prevent installation of bowls within the following chemical periphery because the bowls are made of polycarbonate.

Kind of chemicals	Classification of chemicals	Major products of each chemicals	Ordinal application
Inorganic compound	Acid	Hydrochloric acid·Sulfuric acid·Nitric acid·Fluoride acid·Phosphoric acid·Chromate acid, etc	Acid washing off metal parts·degreasing·Oil film washing
	Alkali	Canstic soda·Canstic potassium·Hydrated lime·Ammonia solvent·Carbonate soda	Alkali washing off metal parts
	Inorganic hydrochlorine	Sulfide soda · Potassium nitrate · Chromic potassium·Sulfa soda	
Organic compound	Aromatic hydrocarbons	Benzene·Toluene·Xylene·Ethyl benzene·Styrene	Contained in the thinner of painting meterial (Benzene·toluene·xylene)
	Chlorinated aliphatic hydrocarbons	Methyl chloride · Ethylene chloride · Methylene chloride · Acetylene chloride · Chloroform · Trichloroethylene·Perchlene·Carbon tetrachloride	Washing rinse of organic solvent off metal components (Trichloro ethylene·perchlene·carbon tetrachloride)
	Chlorinated aromatic hydrocarbons	Chlorobenzene·Dichloro benzene·Benzene hexachloride	Farm chemicals
	Petroleum solvent	Solvent·Naphtha Gasoline	
	Alcohol	Methyl alcohol·Ethyl alcohol Cyclohexanol·Benzyl alcohol	Anti-freezer
	Phenol	Carbolic acid·Cresol·Naphthol	Disinfectant
	Ether	Methyl ether·Methyl-ethyle ether Ethyl ether	Additive to brake fluid
	Ketones	Acetone·Methyl-ethyl keton·Cyclohexanone·Acetophenone	
	Carbonic acid	Formic acid·Acetic acid·Buthylene acid·Acrylic acid·Oxalic acid·Biphthalate acid	Dying ditargent. Oxalic acid as aluminum treatment compound. Biphthalate acid as basic compound of painting
	Phosphoric ester	Dimethyl phthalate(DMP)·Diethyl phthalate(DEP) Dibuthyl phethalate(DBP)· Diothyl phethalate(DOP)·	Additive to lubricant· Synthetic hydraulic fluid· Rust preventive oil and prasticizer to synthetic
	Oxy acid	Glycol acid·Lactic acid·Malic acid·Citrate acid·Tartaric acid	
	Nitro compound	Nitromethane·Nitro ethane·Nitro ethylene Nitro benzene	
	Amin	Methyl amin·Diothyl amin·Ethyl amin·Aniline·Aceto anilido	Additive to brake fluid
	Nitril	Acetonitrile·Acrylonitrile·Benzenitrile·Acetoirinitril	Raw material of nitril rubber

2-2.Others

1) Use within ambient temperature of 5～60℃.
2) Avoid use in the state where inlet air temperature becomes higher than ambient temperature. (An inside may be covered with waterdrop if the main part of a super dryer is cooled.)
3) Avoid installation close to high radiated heat.
4) Keep operating pressure below 1.0MPa.
5) Avoid installation close to welding or spray painting areas.
6) Avoid installation in direct sun light.
7) Avoid the counter flow and to apply the pressure suddenly, other wise the differential pressure gauge as well as the mantle may be damaged.
8) Super dryers reduce oxygen content, do not use for breathing air.

3. INSTALLATION

3-1. Pressure setting

1) Pull down knob and rotate it after confirming not locked.

(Refer to Fig. 1)

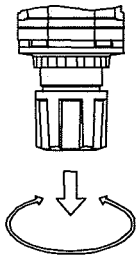


Fig. 1

2) Rotating H-direction (Clockwise) increases pressure, while L-direction (Counter-Clockwise) for decrease.

(Refer to Fig. 2)

3) Knob can not be rotated when they are pushed to be locked.

(Refer to Fig. 2)

NOTE : Use in setting pressure range. Pressure setting higher than primarly pressure can not be obtained.

Fig. 1

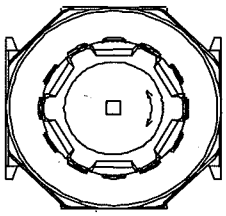


Fig. 2

3-2. Drain discharge

1) Float type automatic discharger is built in the filter, so drain is discharged automatically when drain reaches a certain level.

2) When drain is discharged manually, rotate drain cock to O-side.

3) Confirm that cock is firmly closed after drain discharge by rotating to S-side.

(Refer to Fig. 3)

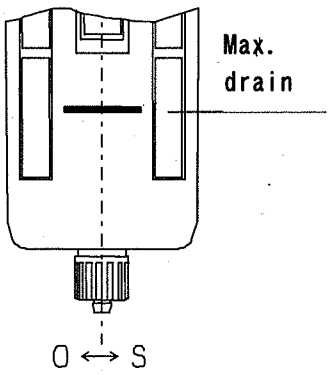


Fig. 3

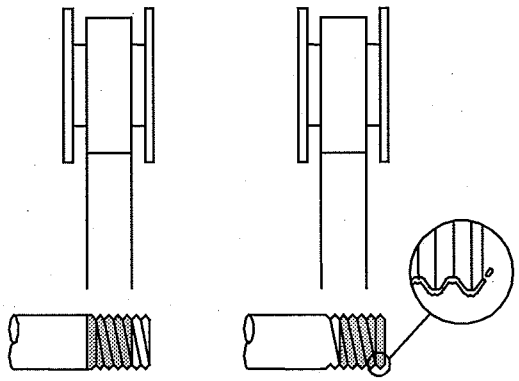
NOTE : Mannual discharge is not possible for oil mist filter. (Model No, SM4000)

4. INSTALLATION

4-1. Piping

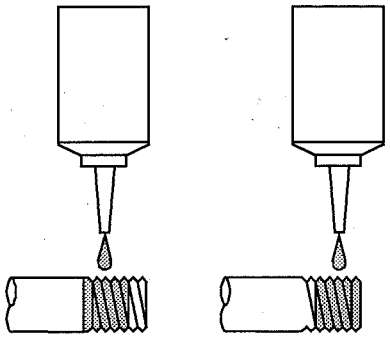
1) Ensure air flow coincides with the directional arrows on cover plate.
2) Use port size larger than that of air piping for air filter and Super dryer.
3) Flush air into the pipe to blow out foreign substances and chips before piping.
4) Refrain applying sealant or sealing tape approx. Two pitches of thread off the tip of pipe to avoid residual substances from falling into piping system.

●Seal Tape



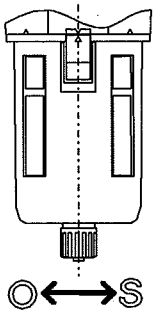
(Correct) (Incorrect)

●Sealant (Paste)

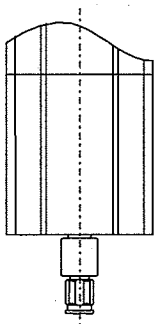


(Correct) (Incorrect)

5) ●Air filter(F3000/F4000)
●Oil mist filter(M3000/M4000)
Nylon tube of inside dia. 5.7-6mm can be connected to drain discharge port directly. Connect the tube after turning the drain cock to the S side and checking being closed.



●Oil mist filter (SM4000)
Nylon tube of outside dia. 8mm can be connected to drain discharge port



Max. length of the pipe is less than 5m, and avoid upward piping.

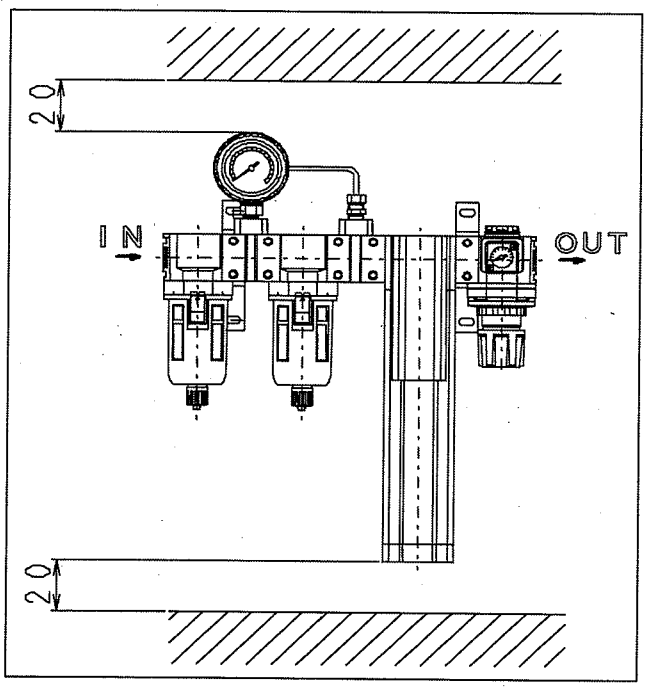
4-2. Installation

1) Installation is made with mounting hole of T type bracket. Refer to external Dimension drawing.

2) Install so that drain discharge port of air filter faces downward.

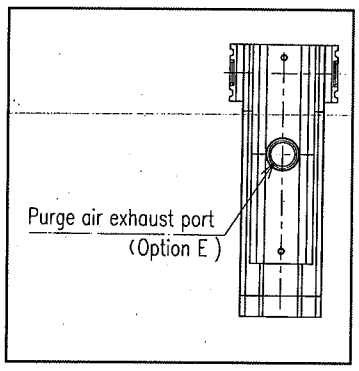
3) Install as close to the pneumatic equipment as possible.

4) Allow a minimum of 20mm over /below the unit for maintenance purpose.



5) In case of the option E of SU3000 series, piping of exhaust air should use the hose or piping material of I.D. 8 mm or more, and give length as less than 3m.

6) In case of the option E of SU4000 series, piping of exhaust air should use the hose or piping material of I.D. 8.9 mm or more, and give length as less than 2m.



5. MAINTENANCE

5-1. Periodical inspection

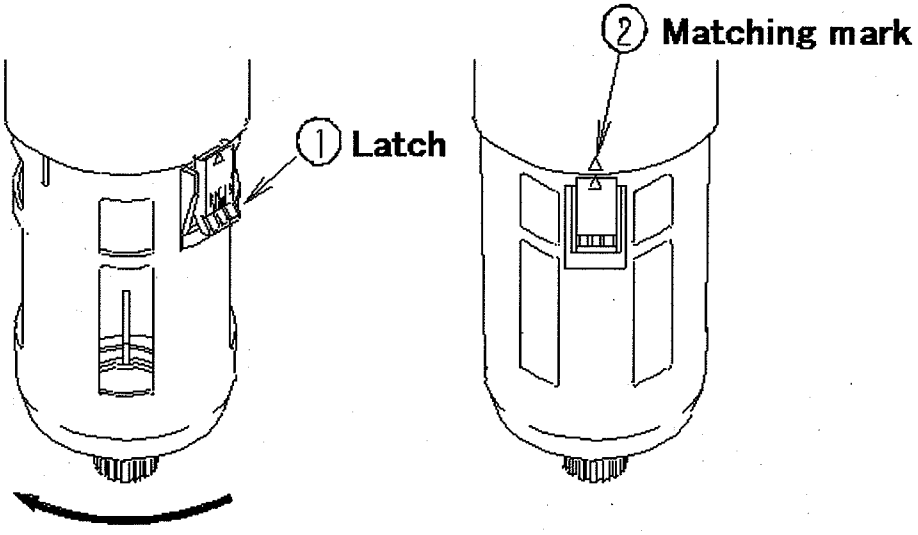
1) Perform periodical check if drain level does not exceeds max drain level.

2) Pressure differential 0.07MPa shows life time for oil mist filter, then element to be replaced by new one. (Refer to 5-5. Maintenance parts).

3) Use house neutral detergent to clean plastic bowl. Do not use other detergent.

5-2. How to Remove Bowl

Shut off air, remove bowl in the following manner after confirming no air is in the bowl.



Rotate bowl and bowl guard Clockwise, pushing the latch.

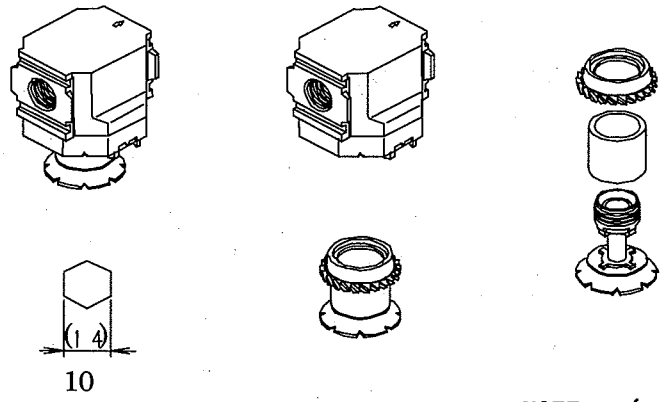
Match the matching mark of spacer and latch , then pull out bowl and bowl guard. Bowl and bowl guard can be detached at the same time.

Follow above steps in reverse manner when assembled. Apply air after confirming latch is in the spacer recessed portion.

5-3. Element replacement

1) Air filter

Remove buffle by which element is fixed, after removing bowl. Use hex. Bar spanner as buffle has hex. hole at lower part. Buffle, element and louver are removed at the same time. Follow the reverse steps when assembled. (Hex. bar spanner to be used…F3000:Round nominated10, F4000:Round nominated14)



NOTE : ( )is for F4000.

2) Oil mist filter

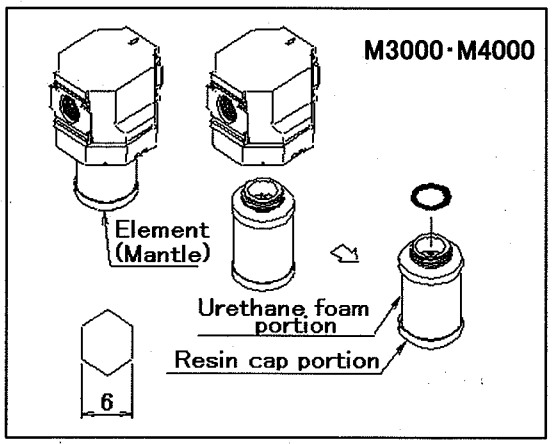
Remove element (Mantle) which is screwed into the body, after removing bowl.

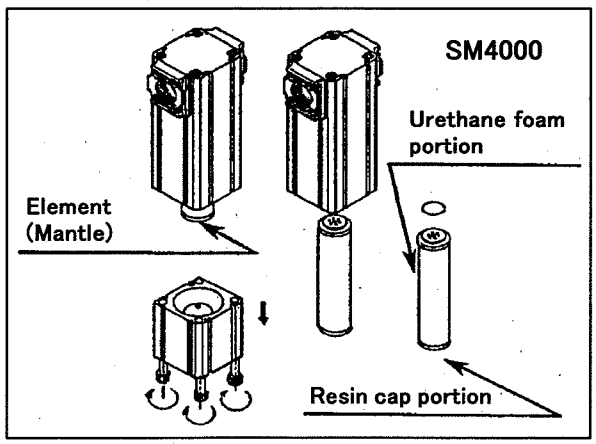
Use hex. bar spanner (Round nominated6) for hex. hole at lower part of element (Mantle)

Aplly grease (Equivalent to daphne eponex grease No.1) to O-ring attached to element (Mantle) when assembled.

Hold resin cap portion when assembled to body, (Do not hold urethane foam portion)

Torque applied to element assembly is 2N·m, for F3000·M3000·M4000·SM4000, 3N·m for F4000.

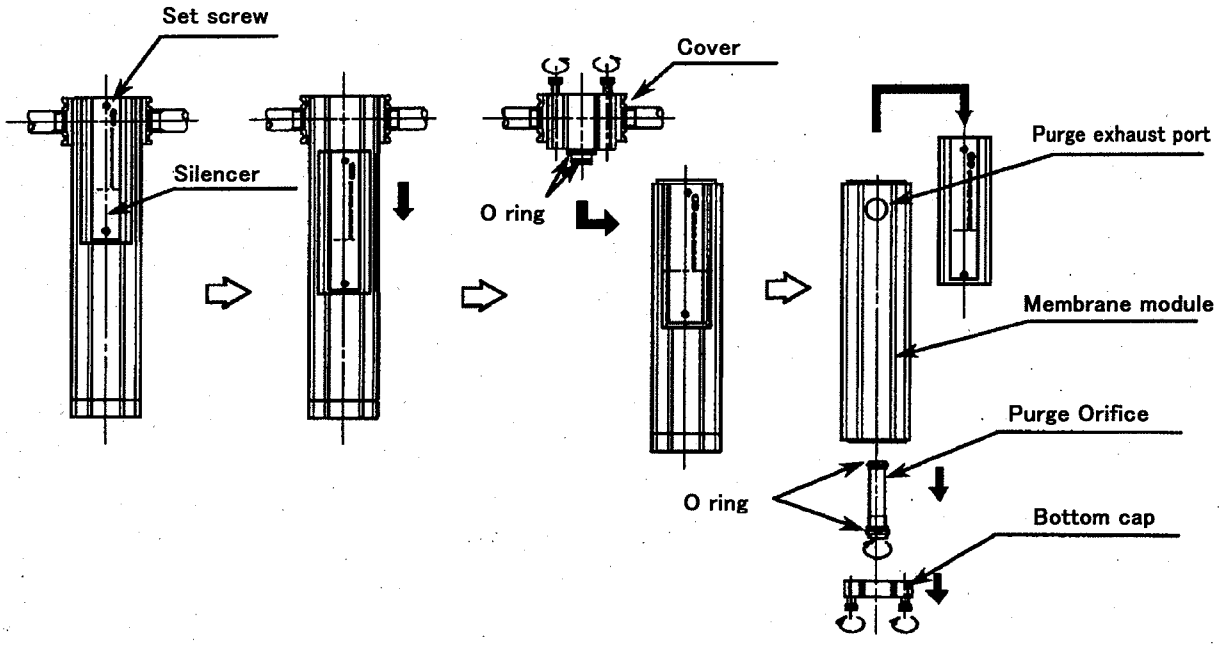




5-4. Membrane module replacement

1) Slide silencer downward by loosening two set screws at silencer portion with hex. bar spanna. (Round nominated 2)
2) Remove membrane module downward by loosening four hex. soc. hd. cap screw. (Upper face) which hex. bar spanna (Round nominated 5 for SD3000, 6 for SD4000)
3) Loosen four hex. soc. hd. cap screw of membrance module base with hex. bar spanna. (Round nominated 5 for SD3000, 6 for SD4000), remove bottom cap, pull out purge orifice after loosening. Silencer to be pulled out also.
4) Do not damage membrance module face, follow above steps in reverse manner when assembled. Tightening torque is as follows:

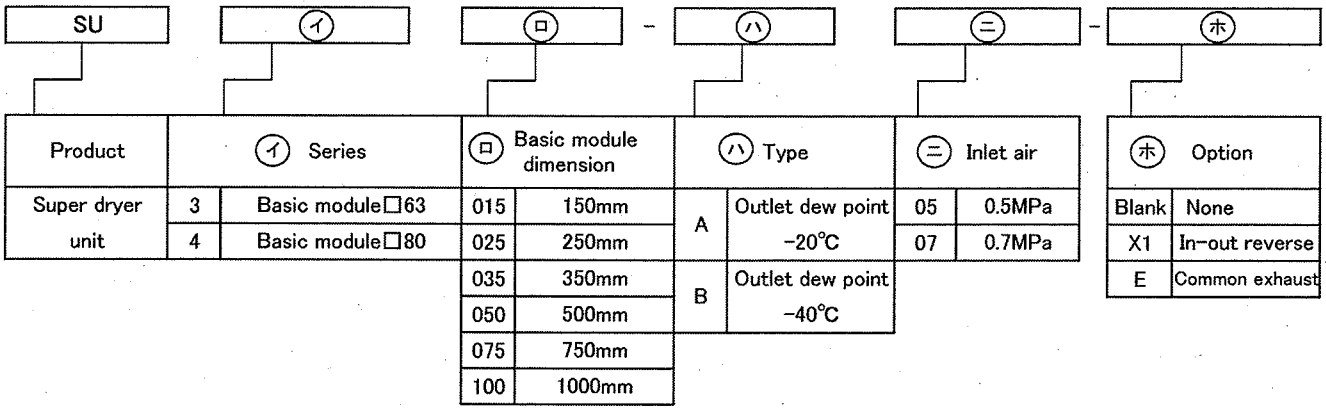
Hex. bar spanna	Tightening torque
Round nominated2	3N·m
Round nominated5	6N·m
Round nominated6	10N·m



5-5. Maintenance parts

Part name / Model code	Air filter element	Oil mist filter element	Membrane module	O ring set
SU3015-○○	F3000-ELEMENT	M3000-MANTLE-ASSY	SD3015-F3-197100	SD-3000/4000-ORING-SET
SU3025-B○	F3000-ELEMENT	M3000-MANTLE-ASSY	SD3025-F3-197101	
SU3025-A○	F4000-ELEMENT	M4000-MANTLE-ASSY	SD3025-F3-197101	
SU3035-A○	F4000-ELEMENT	M4000-MANTLE-ASSY	SD3035-F3-197102	
SU3050-B○	F4000-ELEMENT	M4000-MANTLE-ASSY	SD3050-F3-197103	
SU3050-A○	F4000-ELEMENT	M8000-MANTLE-ASSY	SD3050-F3-197103	
SU3075-A○	F4000-ELEMENT	M8000-MANTLE-ASSY	SD3075-F3-197104	
SU4050-B○	F4000-ELEMENT	M8000-MANTLE-ASSY	SD4050-F3-197105	
SU4100-○○	F4000-ELEMENT	M8000-MANTLE-ASSY	SD4100-F3-197107	

6. MODEL CODING



Product	イ Series		ロ Basic module dimension		ハ Type		ニ Inlet air		ホ Option	
Super dryer unit	3	Basic module□63	015	150mm	A	Outlet dew point -20℃	05	0.5MPa	Blank	None
	4	Basic module□80	025	250mm			07	0.7MPa	X1	In-out reverse
			035	350mm	B	Outlet dew point -40℃			E	Common exhaust
			050	500mm						
			075	750mm						
			100	1000mm						